

## Hand Drill

### Preface

If you work in the field of electrical engineering, you have to have tools for some prototypes, which you either have to buy at a high price or which you can simply develop yourself. Most engineers are used to having tools made to their specifications. As with the rest of the project documentation, no concrete building instructions are given here, as these are already sufficiently available on the Internet. With new functions, which show a certain own achievement, the individual development steps are described more exactly.

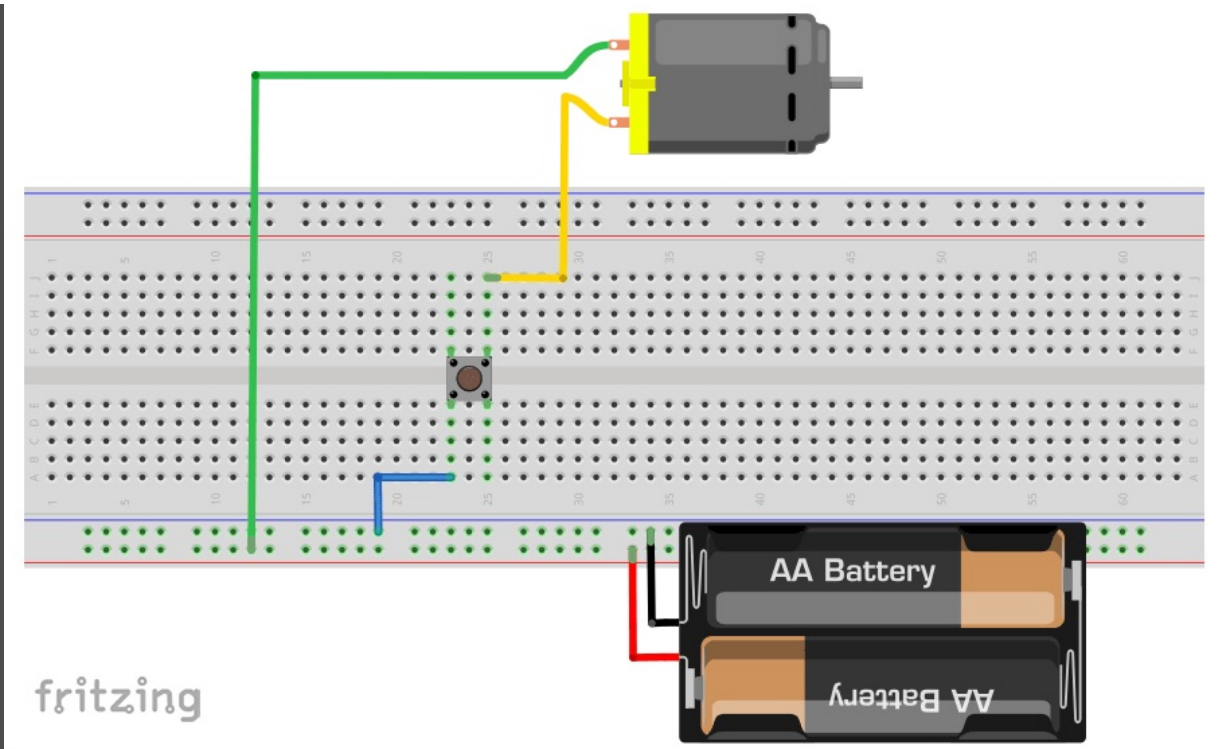
Of course, it is easy to rely on other people's developments or simply to buy technology, because you should not always reinvent the wheel. Only if you really want to understand a basic function should you start designing a prototype from scratch. For example, if you take an existing tool and adapt it to your needs, this method will give you better results. In that sense, we're all [standing on the shoulders of giants](#).

### Materials

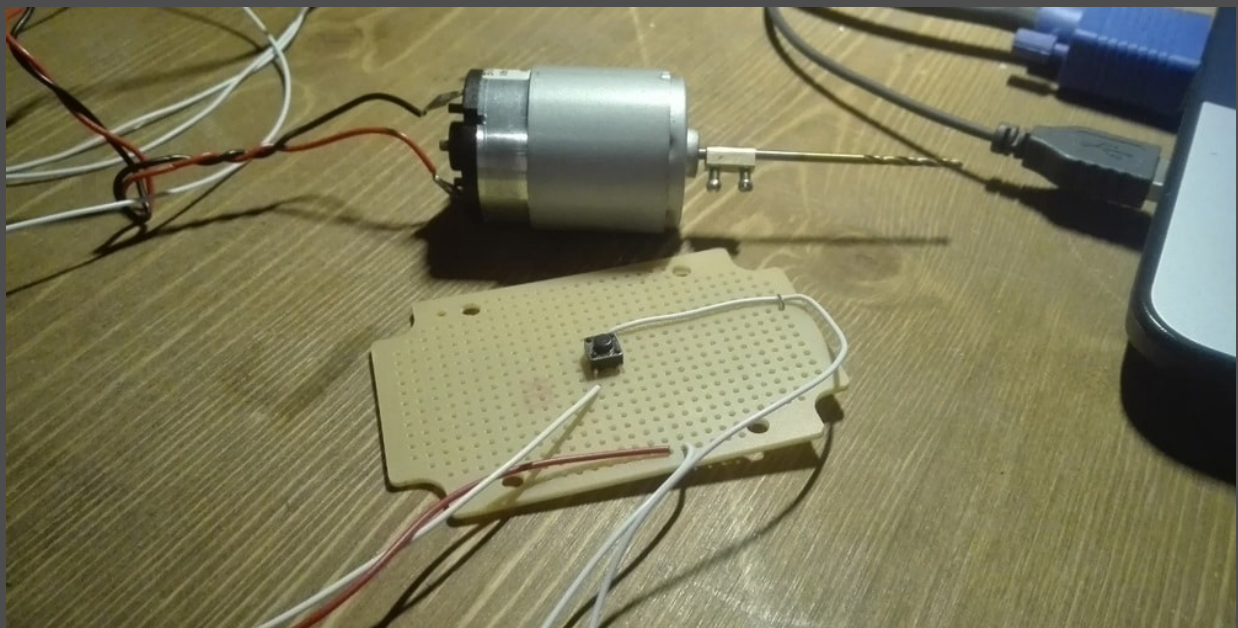
Any material was already available in the warehouse, so nothing had to be reordered. The mini motor was removed from an old printer. Especially as a hobby developer you should always look first where you can organize components cheaply. Since we (unfortunately) still live in a consumer and throwaway society, you can e.g. via online classifieds or in the local supermarket look for news of people who give away electronic scrap. In a printer there are e.g. two mini motors, which one would have had to order otherwise expensively. Besides one finds there bars, springs or cogwheels. Especially when you have to save money or want to try something out more often and spare parts can break down, it's worth it in the long run. Your own cellar is always a good place to browse.

- Miniature Motor
- Strands
- Pushbutton
- Power Supply 5v
- Breadboard
- Heat-Shrink Tubing
- Lustre Terminal
- Drill Bit
- Plastic Casing (or wood)

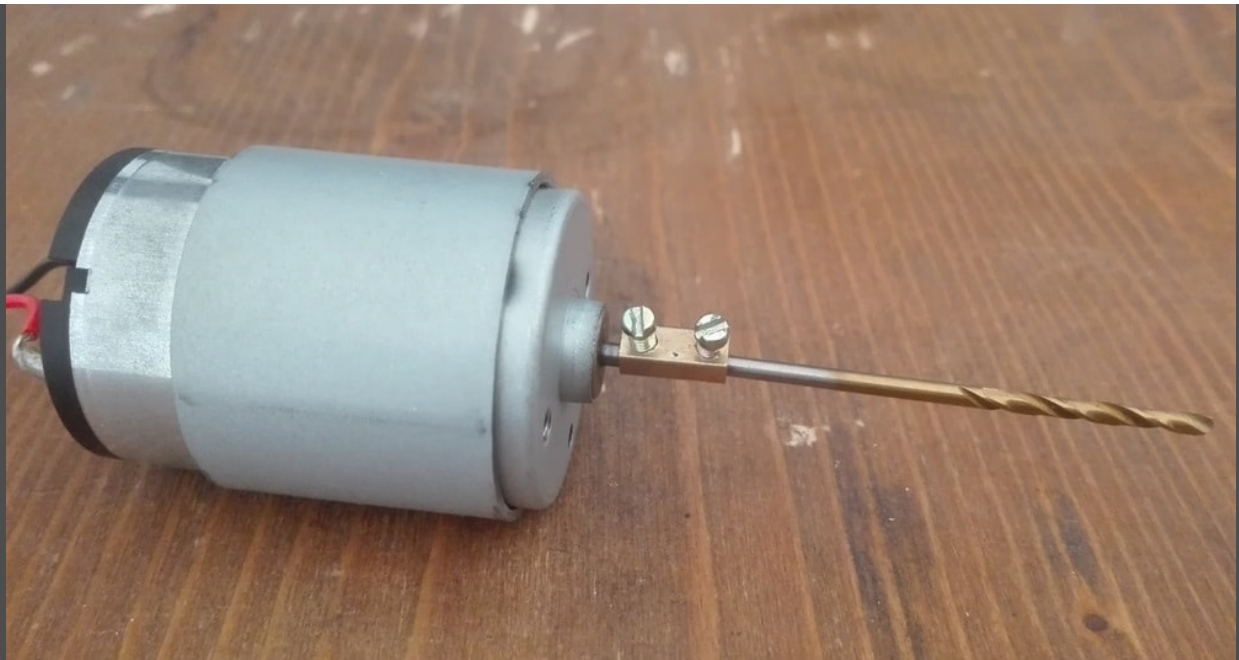
### Documentation



The same view as in the first photo once again in the plug-in board view with the [Fritzing software](#). The practical test revealed some difficulties, which were overcome with the next prototype. The wiring was based on a [tattoo machine](#). Previous developers have always attached the push buttons to the side of the mini motor, which can be regarded as a simple solution, but does not yet achieve the optimum function required by us. For example, the push button is operated by foot so that the hands are free for drilling. This should make it possible to work cleanly.



It was also found that the concept of the luster terminal as a connecting piece between the drilling insert and the miniature motor leads to unwelcome vibrations. This problem could be partially solved with a purchased chuck.

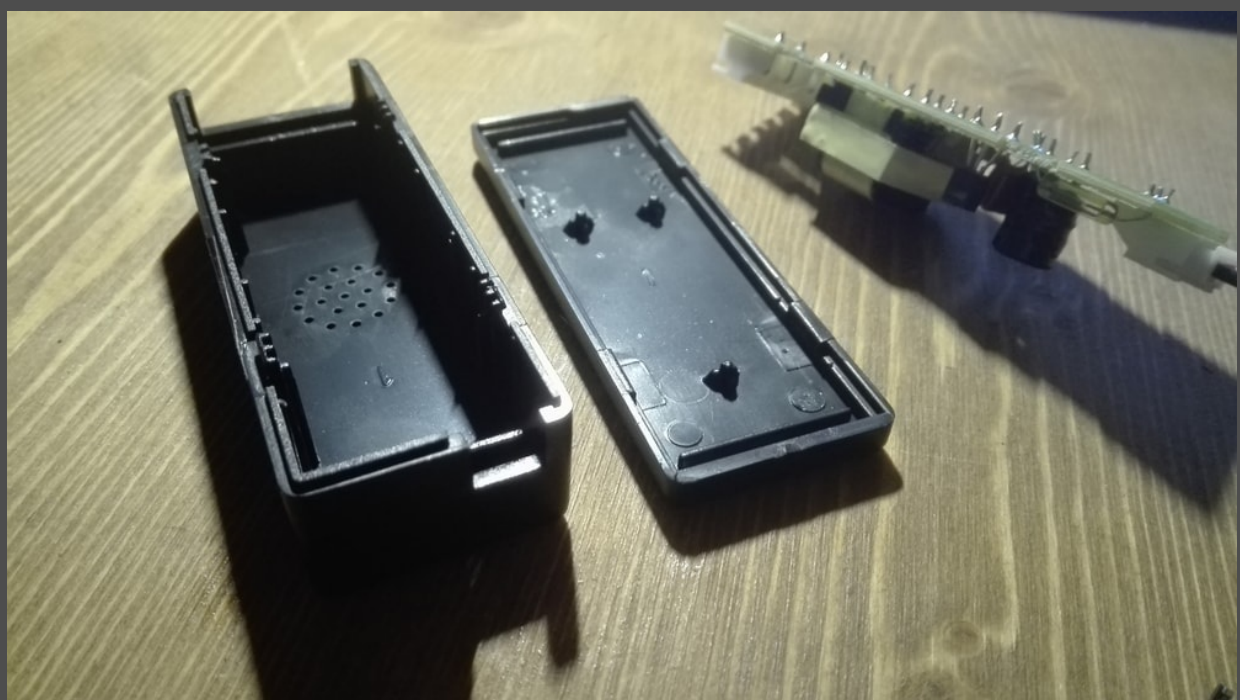


Both diameters were checked with the digital slider and it was determined that the rod of the motor (2.2mm) had to be adapted to that of the chuck (1.7mm).



The electronics are housed in a plastic housing. The housing was taken from another project. I never throw away plastic parts, but put them in a cardboard box which I put in the basement. This has helped me a lot and I was able to save a lot of money.





## Conclusion

This project has been published at least a hundred times as text or video and there are countless variations of it. I just wanted to do this as a beginner project for kids who haven't had much to do with electrical engineering yet. We all start small. If you rebuild the project, you will soon notice that the hand drill is well suited for small drill holes, but it also drills very dirty. Jung-Hacker begin to ask for the "why?" and then learn something about engines and vibrations.